
Uncommon fusion of teeth and lateral periodontal cyst in a Chinese girl: a case report

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Fusion is a developmental anomaly of dental hard tissues. Most cases occur in the anterior region of both the primary and permanent dentitions. Occasionally, fusion of permanent and supernumerary teeth may occur in the maxillary anterior region; however, a supernumerary tooth fused with a premolar is a rare case. Developmental lateral periodontal cyst is also an uncommon developmental odontogenic cyst with no clinical symptoms, and the lesion is often discovered on routine radiographic examination. In the present case, we report the uncommon fusion of teeth and lateral periodontal cyst in a Chinese girl. Using cone beam computed tomography we are able to acquire a better understanding of the complicated root canal morphology of the fused tooth and successfully manage the lateral periodontal cyst. (*Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2011;112:e18-e20)

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CASE REPORT

An 18-year-old girl complaining of a newly erupted tooth was referred to pediatric dentistry, Peking University, School and Hospital of Stomatology. Two weeks earlier a tooth had erupted in her upper jaws with no symptoms. She wanted to extract the tooth. On clinical examination, the maxillary right first premolar exhibited abnormal crown morphology, with a supernumerary tooth located close to its palatal surface. The

supernumerary tooth was small in size and conical-shaped (Fig. 1, A). There were no such clinical features in her family.

Moreover, oral examination revealed gingival swelling located between the labial surface of the maxillary right canine and first premolar. The swelling was about 8 mm in diameter, and fluctuated with palpation (Fig. 2, A). The canine and the first premolar were not sensitive to percussion. The teeth showed normal response to cold test and were found to be vital to electric pulp testing. The patient had not noticed this abnormality before, and had no symptoms.

CBCT showed root fusion of the supernumerary tooth and the first premolar, and partial fusion of the pulp chambers, but the crowns were separated (Fig. 1, B). Based on CBCT, the diagnosis was established as fusion of the premolar and supernumerary tooth. Extraction of the supernumerary tooth was denied. No invasive treatment was planned because the patient had no functional or esthetic problems. Oral hygiene instruction was provided to avoid carious pulp infection.

CBCT also showed a round 13-mm well-delineated radiolucency between the roots of the canine and first premolar. The labial cortical bone was involved, but the lamina dura surrounding the adjacent teeth were normal (Fig. 3). The diagnosis of lateral periodontal cyst of developmental origin was made. Cyst curettage was planned after informed consent. Under local anesthesia, a crevicular incision was made around the labial surfaces of the maxillary right canine and the first premolar, and a full-thickness flap was elevated to expose the bone defect. The lesion was completely excavated and irrigated with normal saline (Fig. 2, B). The flap was unilaterally sling sutured and covered with periodontal dressing (Fig. 2, C). Histopathological analysis showed an infected cyst wall, which supported the diagnosis of lateral periodontal cyst of developmental origin. At 3-week follow-up, the patient was asymptomatic and the gingival mucosa of the operative field appeared normal (Fig. 2, D).

DISCUSSION

Fusion is one kind of developmental anomaly of dental hard tissues with unusual anatomy. Fusion oc-

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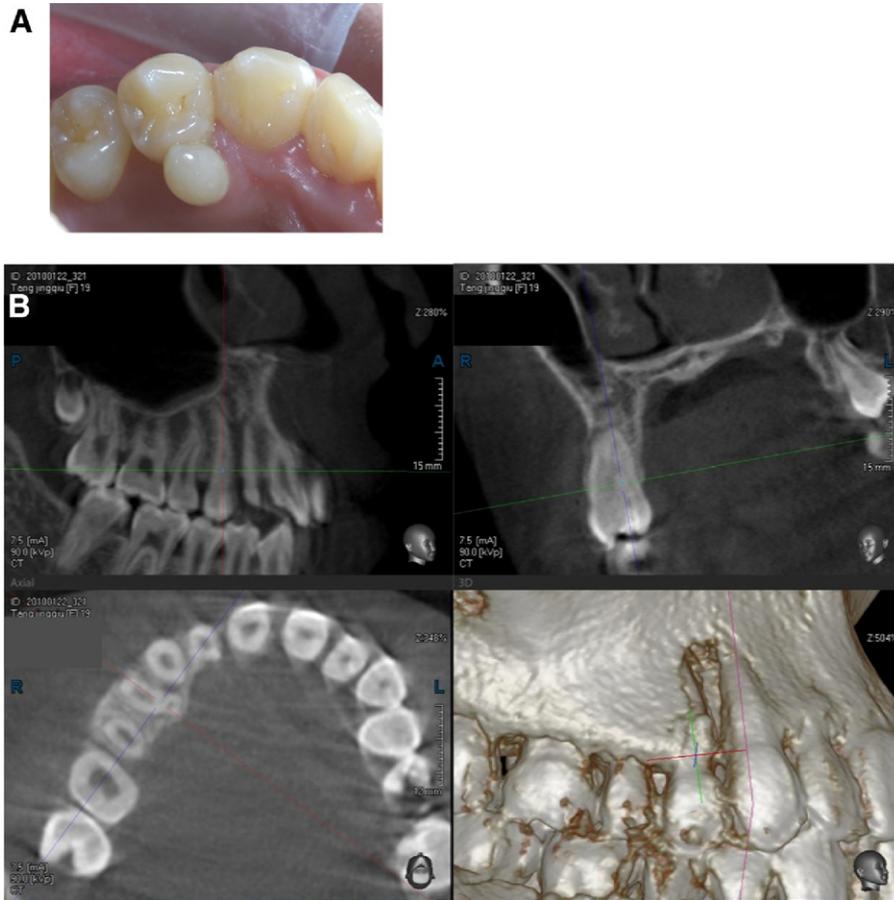


Fig. 1. **A**, Oral examination showed a supernumerary tooth close to the right maxillary premolar. **B**, Cone beam CT revealed the fusion of a supernumerary tooth and the first premolar.

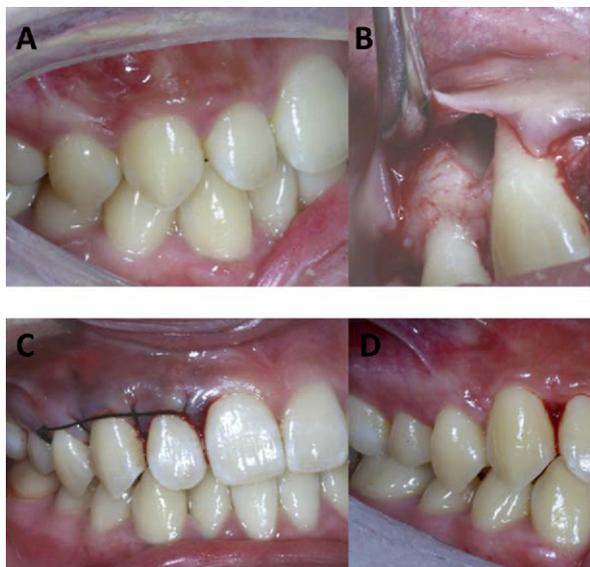


Fig. 2. **A**, Gingival swelling at the labial surface of the canine and premolar. **B**, A full-thickness flap was elevated to expose the bone defect. The cystic wall and granulation tissue inside were excavated. **C**, The flap was unilateral sling sutured. **D**, Three weeks after surgical treatment the gingival mucosa appeared normal.

occurs because of the union of 2 separate tooth germs with a resultant formation of a joint tooth with the confluence of dentin.¹ Most cases occur in the anterior region of both the primary and permanent dentition. The frequency of fusion between permanent and supernumerary teeth is 0.1% and this type of fusion usually involves maxillary anterior teeth.²⁻⁴ A supernumerary tooth fused with a premolar is relatively uncommon. Depending on the stage of tooth development at the time of union, fused teeth may contain separate pulp canals or share a common pulp canal. In this case, the crowns of the teeth were separated, which made it easy to misdiagnose without further examination. Conventional 2-dimensional radiographic analysis was inadequate to provide detailed information about the case. Three-dimensional dental CBCT has been shown to achieve good imaging quality with less radiation exposure than conventional CT devices and demonstrates good diagnostic accuracy. In this case, the use of CBCT provided detailed information of the fused tooth and was helpful for diagnosis.



Fig. 3. Cone beam CT revealed a bone defect at the labial surface of the canine and premolar. The lamina dura and periapical bone were normal

Developmental lateral periodontal cyst is an uncommon developmental odontogenic cyst. This lesion is more common in adults. It mostly occurs in the mandibular premolar and canine regions. Because pain or other clinical symptoms have seldom been reported, the lesion is often discovered on routine radiographic examination.^{5,6} Most are smaller than 1 cm in diameter and are located on the cervical margin of the tooth.⁷ Radiographs of the lateral periodontal cyst show a well-circumscribed radiolucent area, usually with a sclerotic margin. The pathogenesis of the lateral periodontal cyst is not fully known. The reduced enamel epithelium, remnants of dental lamina, and cell rests of Malassez seem to be 3 possibilities.⁸ Another concept of the pathogenesis of lateral periodontal cyst is the possible origin as a primordial cyst of a supernumerary tooth germ.⁵ In this case, the lateral periodontal cyst and supernumerary tooth are located close together, whether the germination of the 2 anomalies has a relationship is interesting and needs further research.

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